

SYLLABUS IN GEF2610, 2010

**Set book: Pickard and Emery, "Descriptive Physical Oceanography",
5th edition**

Chapter 1. Introduction

The entire chapter is prescribed. It contains very useful and less useful background information. The student should try to separate out the useful parts. 4 pages.

Chapter 2. Ocean Dimensions, Shapes and Bottom Materials

The entire chapter is prescribed, 7 pages.

Chapter 3. Physical Properties of Sea-Water

The text from page 21 including section 3.55 is omitted. The rest is prescribed. (The chapter contains a lot of details. Not all of them need to be memorized, but rather their qualitative physical implications. For instance, the details of the equation for the speed of sound on page 26 will not be required, but the equation shows that the speed increases with increasing t , S and D , and this is the important result.) 19.5 pages.

Chapter 4. Typical Distributions of Water Characteristics in the Oceans

The entire section 4.43 and the mathematical formulas are not required, but the student should know the meaning of the concept of static stability. The rest is prescribed. 28 pages.

Chapter 5. Water, Salt and Heat Budgets of the Oceans

The sections 5.37, 5.381 and 5.384 can be omitted. The rest is prescribed. (The numerical details of equations (5.2) and (5.4) are not required, but the equations are useful for estimates.) 20.5 pages.

Chapter 6. Instruments and Methods

The entire section 6.255 is not required, but the student should know the forces balancing each other in a geostrophic current, and know the angles between current direction, pressure force and Coriolis force. The sections 6.256, 6.32, 6.53 and 6.544 are omitted. The rest is prescribed. (The student should not dwell on all technical and numerical details, but try to understand the more general principles.) 38.5 pages.

Chapter 7. Circulation and Water Masses of the Oceans

The entire section 7.12 is not required, but the student should know the forces balancing each other in an Ekman spiral, and know the angles between the wind direction, the surface velocity, and the total Ekman transport in the surface layer. The sections 7.341, 7.344, 7.353, and 7.45 are omitted. Details in 7.351, 7.41, 7.42, 7.43, 7.53, 7.54, 7.6 and 7.7 are not required. The rest is prescribed, 92 pages.

Chapter 8. Coastal Oceanography

Section 8.5 is omitted. The rest is prescribed. 10 pages.

Chapter 9. Some Directions for Future Work

Omitted.

The total syllabus for this book contains about 220 pages.

Notes: Odd H. Sælen and Eyvind Aas, "Lecture Notes in Physical Oceanography", 1984. 130 pages.

Chapter 1 Extent of the Oceans and their Divisions

Corresponds to Chapter 2 in P&E. 9 pages.

Chapter 2 Chemical Composition of Seawater

Corresponds to Chapter 3.4, 4.5 and 4.62 in P&E. 7 pages.

Chapter 3 Physical Properties of Seawater

Corresponds to Chapter 3 in P&E. 19 pages.

Chapter 4 Influence of the Atmosphere on the Sea

All is syllabus. 8 pages.

Chapter 5 Distribution of T , S and ρ

Corresponds to Chapter 4 in P&E. 8 pages.

Chapter 6 Equations of Motion

Syllabus, but the derivation of equation 6.7 is not required. Similarly the equations 6.12-6.15 are omitted. Parts of this chapter correspond to Chapter 6.255-6.256 in P&E. 17 pages.

Chapter 7 Surface Currents - Upwelling - Vertical Circulation

All is syllabus. Corresponds to Chapter 7 in P&E, but here is additional information. 25 pages.

Chapter 8 Waves

All is syllabus. 8 pages.

Chapter 9 Tides

All is syllabus. 10 pages.

Chapter 10 Fjords and estuaries

Corresponds in parts to Chapter 8 in P&E, but there is more information about Norwegian conditions. 10 pages.

Chapter 11 Ice in the Sea

Corresponds to Chapter 7.54 in P&E. 3 pages.

Total syllabus is 124 pages.